

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-88. (Canceled)

89. (Previously presented) An isolated antibody or antigen binding fragment thereof which specifically binds to a polypeptide at least 90% identical to the secreted protein encoded by a polynucleotide sequence selected from the group consisting of SEQ ID NOS: 1, 5, 9, 11, 13 and 15, wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to decrease bone mineral content.

90. (Canceled)

91. (Previously presented) The antibody or antigen binding fragment thereof of claim 89 wherein the isolated antibody or binding fragment thereof is a polyclonal antibody.

92. (Previously presented) The antibody or antigen binding fragment thereof of claim 89 wherein the isolated antibody or binding fragment thereof is a monoclonal antibody.

93. (Previously presented) The antibody or antigen binding fragment thereof of claim 89 wherein the isolated antibody or binding fragment thereof is a humanized antibody.

94. (Currently amended) The antibody or antigen binding fragment thereof of claim 89 wherein the antibody or antigen binding fragment binds to said secreted protein with ~~[[has]]~~ an affinity K_a of at least ~~[[10^{-7} M]]~~ 10^7 M⁻¹.

95. (Currently amended) The antibody or antigen binding fragment thereof of claim 89 wherein the antibody or antigen binding fragment binds to said secreted protein with ~~[[has]]~~ an affinity K_a of at least ~~[[10^{-8} M]]~~ 10^8 M⁻¹.

96. (Previously presented) A hybridoma that produces an antibody according to claim 89.

97. (Withdrawn) A method of producing monoclonal antibodies, comprising immunizing an animal with a protein comprising a polypeptide selected from the group consisting of (i) a polypeptide, or portion thereof, that is encoded by a polynucleotide that comprises a nucleotide sequence selected from SEQ ID NOs:1, 5, 7, 9, 11, 13, and 15, and (ii) a polypeptide that comprises an amino acid sequence selected from SEQ ID NOs: 2, 6, 8, 10, 12, 14, and 16, wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to decrease bone mineral content.

98. (Withdrawn) A method for production of an antibody according to claim 89 comprising culturing hybridoma cells under conditions that permit the production of said antibody.

99. (Withdrawn) A method for production of an antibody or binding fragment thereof of claim 89, comprising:

(a) providing a recombinant host cell capable of producing said antibody or binding fragment thereof; and

(b) culturing said cell under conditions that permit the production of said antibody or binding fragment.

100. (Withdrawn) A method for immunizing an animal to produce a cell capable of expressing an antibody that binds to a polypeptide, comprising injecting into an animal said polypeptide, or portion thereof, wherein said polypeptide is selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide that comprises a nucleotide sequence selected from SEQ ID NOs: 1, 5,7,9, 11, 13, and 15, and

(ii) a polypeptide that comprises an amino acid sequence selected from SEQ ID NOs:2, 6, 8, 10, 12, 14, and 16,

wherein said polypeptide retains a cysteine backbone comprising eight cysteines and retains the ability to decrease bone mineral content.

101. (Currently amended) An isolated conjugate or fusion protein ~~polypeptide~~ comprising an antibody, or an antibody fragment ~~thereof~~ that binds to the secreted protein encoded by SEQ ID NO: 1, wherein the conjugate or fusion protein ~~polypeptide~~ binds said protein with an affinity K_a of greater than or equal to $10^7 M^{-1}$.

102. (Currently amended) An isolated conjugate or fusion protein ~~polypeptide~~ comprising the antibody, or antibody fragment of claim 89.

103. (Currently amended) The conjugate or fusion protein ~~polypeptide~~ of claim 101, further comprising an effector or reporter molecule.

104. (Currently amended) The conjugate or fusion protein ~~polypeptide~~ of claim 103, wherein the effector or reporter molecule is selected from the group consisting of antineoplastic agents, toxins, enzymes and fragments thereof, naturally occurring and synthetic polymers and derivatives thereof, radionuclides, chelated metals, fluorescent compounds and compounds which may be detected by NMR or ESR spectroscopy.

105. (Currently amended) The conjugate or fusion protein ~~polypeptide~~ of claim 101, wherein the antibody fragment is selected from the group consisting of $F(ab')_2$, $F(ab)_2$, Fab' , Fab , and Fv .

106. (Currently amended) The conjugate or fusion protein ~~polypeptide~~ of claim 101, wherein the antibody is selected from the group consisting of murine monoclonal antibodies, human monoclonal antibodies, humanized monoclonal antibodies, and antibody fragments thereof.

107. (Withdrawn) A method of increasing bone mineral content in a human comprising administering to the human (a) the polypeptide of claim 101 in an amount effective to increase bone mineral content and (b) an inhibitor of bone resorption.

108. (Withdrawn) The method of claim 107, wherein the inhibitor of bone resorption is selected from the group consisting of calcitonin, estrogen, a bisphosphonate, a growth factor having anti-resorptive activity and tamoxifen.

109. (Withdrawn) The method of claim 107, wherein the inhibitor of bone resorption is a bisphosphonate.

110. (New) An antibody or antibody fragment that binds to the secreted protein encoded by SEQ ID NO: 1, wherein the antibody or antibody fragment binds said secreted protein with an affinity K_a of greater than or equal to 10^7 M^{-1} .